

Appendix B
Supporting Data
2011 PLOO Stations
Water Quality

Appendix B.1

Summary of rainfall and bacteria levels at PLOO shore stations during 2011. Total coliform, fecal coliform, and enterococcus densities are expressed as mean CFU/100 mL per month and for the entire year. Rain data are from Lindbergh Field, San Diego, CA. Stations are listed north to south from top to bottom; *n* = total number of samples.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011 Total Rain (in):		0.30	2.10	1.46	0.26	0.36	0.03	0.00	0.00	0.13	0.46	3.12	0.86
D12	<i>Total</i>	20	25	17	49	49	16	132	24	13	90	21	16
	<i>Fecal</i>	3	2	4	2	3	2	4	3	2	16	11	6
	<i>Entero</i>	4	3	3	2	3	2	12	2	2	31	5	4
D11	<i>Total</i>	36	1032	448	1292	108	92	124	37	19	108	52	34
	<i>Fecal</i>	8	50	19	35	10	10	41	14	4	25	10	3
	<i>Entero</i>	7	18	17	9	4	20	9	11	4	18	17	2
D10	<i>Total</i>	80	724	184	108	24	66	28	173	32	116	52	53
	<i>Fecal</i>	14	13	8	10	4	6	9	9	4	29	14	4
	<i>Entero</i>	14	18	3	2	2	2	3	6	2	15	8	4
D9	<i>Total</i>	17	381	14	57	16	221	56	27	20	52	44	89
	<i>Fecal</i>	6	12	2	2	2	118	2	3	2	16	7	7
	<i>Entero</i>	5	12	3	2	2	13	2	2	2	14	4	2
D8	<i>Total</i>	432	596	88	48	64	20	64	110	180	405	532	189
	<i>Fecal</i>	54	59	11	3	3	5	4	36	8	72	18	11
	<i>Entero</i>	49	16	13	2	3	3	3	2	2	39	19	4
D7	<i>Total</i>	20	88	36	20	28	21	100	50	208	64	60	6
	<i>Fecal</i>	4	8	17	4	3	5	12	5	32	8	10	7
	<i>Entero</i>	2	3	2	3	2	2	4	3	9	13	6	2
D5	<i>Total</i>	24	30	16	276	16	21	96	20	56	92	92	52
	<i>Fecal</i>	2	6	2	178	2	2	4	3	10	6	4	2
	<i>Entero</i>	2	2	2	38	2	2	2	3	6	3	5	3
D4	<i>Total</i>	18	60	9	24	22	16	56	67	64	16	17	9
	<i>Fecal</i>	2	3	2	3	3	2	5	2	4	6	2	2
	<i>Entero</i>	2	2	3	2	2	2	3	2	3	2	2	2
<i>n</i>		40	39	40	40	40	40	40	48	40	39	40	40
Annual Means	<i>Total</i>	81	376	102	234	41	59	82	63	74	111	109	56
	<i>Fecal</i>	12	20	8	29	4	19	10	9	8	22	10	5
	<i>Entero</i>	11	10	6	8	3	6	5	4	4	17	8	3

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Appendix B.2

Summary of samples with elevated FIB densities at PLOO shore stations during wet and dry seasons between 1991–2011. Wet=January–April and October–December; Dry=May–September; *n*=total number of samples. Rain was measured at Lindbergh Field, San Diego, CA. Stations are listed north to south from left to right.

Year	Season	D12	D11	D10	D9	D8	D7	D5	D4	Rain (in)	Total	<i>n</i>
1991	Wet	ns	ns	ns	0	2	0	1	0	12.97	3	90
	Dry	ns	ns	ns	0	1	0	0	0	0.54	1	105
1992	Wet	ns	ns	ns	6	11	18	53	42	12.62	130	384
	Dry	ns	ns	ns	0	1	1	7	2	0.19	11	110
1993	Wet	ns	ns	ns	0	2	2	2	0	16.81	6	89
	Dry	ns	ns	ns	0	1	2	1	0	0.45	4	103
1994	Wet	ns	ns	ns	3	2	0	0	1	9.32	6	84
	Dry	ns	ns	ns	0	0	0	0	0	0.11	0	95
1995	Wet	ns	ns	ns	2	3	0	1	1	14.76	7	87
	Dry	ns	ns	ns	0	2	3	0	0	1.10	5	100
1996	Wet	ns	ns	ns	0	2	0	0	0	7.13	2	83
	Dry	ns	ns	ns	0	3	0	0	0	0.14	3	101
1997	Wet	ns	ns	ns	1	4	0	0	0	6.15	5	87
	Dry	ns	ns	ns	0	0	1	0	1	0.85	2	97
1998	Wet	ns	ns	ns	1	2	1	0	0	15.08	4	81
	Dry	ns	ns	ns	0	1	0	0	0	0.97	1	95
1999	Wet	ns	ns	ns	1	1	0	0	0	5.31	2	81
	Dry	ns	ns	ns	0	2	0	0	0	0.12	2	97
2000	Wet	ns	ns	ns	0	1	1	0	0	6.89	2	80
	Dry	ns	ns	ns	1	1	1	0	1	0.01	4	98
2001	Wet	ns	ns	ns	0	0	0	0	0	8.46	0	80
	Dry	ns	ns	ns	0	1	0	0	0	0.01	1	96
2002	Wet	ns	ns	ns	0	0	0	0	0	3.92	0	79
	Dry	ns	ns	ns	0	0	1	0	0	0.31	1	100
2003	Wet	0	1	2	2	4	2	1	0	8.88	12	162
	Dry	0	0	0	0	0	1	1	0	0.30	2	119
2004	Wet	2	5	4	2	3	2	2	1	13.29	21	281
	Dry	0	0	0	0	1	0	1	0	0.00	2	210
2005	Wet	0	3	0	3	6	1	2	2	13.86	17	281
	Dry	0	1	0	0	1	0	0	0	0.25	2	208
2006	Wet	1	1	1	0	4	0	1	0	5.33	8	295
	Dry	0	3	0	0	1	0	0	0	0.82	4	199
2007	Wet	2	2	2	0	2	0	0	0	4.32	8	306
	Dry	1	1	0	0	0	1	0	0	0.05	3	208
2008	Wet	1	2	3	3	4	1	0	0	10.86	14	288
	Dry	0	0	0	1	0	0	0	0	0.25	1	200
2009	Wet	0	2	1	0	7	1	0	1	5.43	12	277
	Dry	1	0	0	0	1	0	0	0	0.07	2	199
2010	Wet	2	2	2	0	1	2	1	1	16.20	11	257
	Dry	0	0	0	0	0	0	0	0	0.08	0	208
2011	Wet	0	0	0	0	1	0	1	0	8.56	2	278
	Dry	0	0	0	1	0	0	0	0	0.52	1	208
Total	Wet	8	18	15	24	62	31	65	49	162.97	272	3730
	Dry	2	5	0	3	17	11	10	4	5.27	52	2956

ns = not sampled

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Appendix B.3

Summary of samples with elevated FIB densities at PLOO kelp bed stations during wet and dry seasons between 1991–2011. Wet=January–April and October–December; Dry=May–September; *n*=total number of samples. Rain was measured at Lindbergh Field, San Diego, CA. Stations are listed north to south from left to right.

Year	Season	9-m Stations			18-m Stations					Rain (in)	Total	<i>n</i>
		C6	C5	C4	A6	A7	A1	C8	C7			
1991	Wet	2	5	1	45	47	42	24	30	12.97	196	2093
	Dry	2	1	4	30	38	29	22	27	0.54	153	1496
1992	Wet	48	77	52	116	87	68	34	55	12.62	537	2579
	Dry	3	8	1	64	67	58	24	39	0.19	264	1737
1993	Wet	4	3	4	36	50	45	18	25	16.81	185	2336
	Dry	3	2	0	38	51	37	23	23	0.45	177	1711
1994	Wet	1	1	1	0	0	1	1	5	9.32	10	1868
	Dry	1	0	0	4	0	1	1	0	0.11	7	1189
1995	Wet	1	4	2	2	1	2	2	2	14.76	16	1028
	Dry	1	0	1	0	2	0	0	0	1.10	4	596
1996	Wet	0	2	1	1	1	1	0	1	7.13	7	870
	Dry	0	2	0	0	0	1	0	0	0.14	3	599
1997	Wet	1	0	2	4	3	3	0	0	6.15	13	806
	Dry	0	0	0	0	0	0	0	1	0.85	1	576
1998	Wet	0	2	2	1	3	1	3	0	15.08	12	824
	Dry	1	0	1	1	2	2	0	0	0.97	7	600
1999	Wet	0	0	0	1	0	1	0	0	5.31	2	840
	Dry	0	0	0	0	0	0	0	0	0.12	0	600
2000	Wet	0	0	0	0	0	0	0	0	6.89	0	831
	Dry	0	0	0	0	0	0	1	0	0.01	1	599
2001	Wet	0	0	0	0	0	0	0	2	8.46	2	840
	Dry	0	0	0	0	0	0	0	0	0.01	0	600
2002	Wet	0	0	0	0	0	0	0	0	3.92	0	802
	Dry	0	0	0	0	0	0	0	0	0.31	0	599
2003	Wet	0	0	0	0	0	0	0	0	8.88	0	823
	Dry	0	0	0	0	0	1	0	0	0.30	1	600
2004	Wet	0	5	5	0	5	4	2	0	13.29	21	820
	Dry	0	0	0	0	0	0	0	0	0.00	0	599
2005	Wet	2	1	0	1	0	0	1	1	13.86	6	831
	Dry	0	0	0	0	0	0	0	0	0.25	0	597
2006	Wet	0	0	0	0	0	0	0	0	5.33	0	837
	Dry	0	0	0	0	0	0	0	0	0.82	0	600
2007	Wet	0	0	0	0	0	2	0	0	4.32	2	831
	Dry	0	0	0	0	0	0	0	0	0.05	0	600
2008	Wet	0	1	0	0	0	0	0	0	10.86	1	837
	Dry	0	0	0	0	0	0	0	0	0.25	0	598
2009	Wet	0	0	2	1	1	2	1	0	5.43	7	839
	Dry	0	0	0	4	4	2	3	1	0.07	14	600
2010	Wet	0	0	1	0	1	1	0	0	16.20	3	831
	Dry	0	0	0	1	1	0	0	0	0.08	2	598
2011	Wet	0	0	0	0	0	0	0	0	8.56	0	837
	Dry	0	0	0	0	0	1	0	0	0.52	1	600
Total	Wet	59	101	73	208	199	174	86	121	162.97	1021	23,203
	Dry	11	13	7	142	165	131	74	91	5.27	634	16,294

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Appendix B.4

Summary of compliance with the 2005 California Ocean Plan water contact standards for PLOO shore, kelp bed, and offshore stations during 2011. The values reflect the number of times per month that each station exceeded various total coliform, fecal coliform, and enterococcus bacterial standards (see Chapter 3; Box 3.1).

30-day Geometric Mean Standards								
Month	Shore Stations							
	D4	D5	D7	D8	D9	D10	D11	D12
Total Coliform								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	100%	100%	100%	100%	100%
Fecal Coliform								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	100%	100%	100%	100%	100%
Enterococcus								
January	0	0	0	13	0	18	20	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	96%	100%	95%	95%	100%

Appendix B.4 *continued*

Month	Single Sample Maximum Standards Shore Stations							
	D4	D5	D7	D8	D9	D10	D11	D12
Total Coliform								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	100%	100%	100%	100%	100%
Fecal Coliform								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	1	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	1	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	98.4%	100%	100%	98.4%	100%	100%	100%

Appendix B.4 *continued*

Single Sample Maximum Standards								
	Shore Stations							
Month	D4	D5	D7	D8	D9	D10	D11	D12
Enterococcus								
January	0	0	0	1	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	1	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	98.4%	100%	98.4%	100%	100%	100%	100%
Fecal/Total Coliform Ratio (FTR)								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	1	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	98.4%	100%	100%	100%	100%	100%	100%

Appendix B.4 *continued*

30-day Geometric Mean Standards		
Kelp Bed Stations		
9-m Stations		18-m Stations

[illegible]

Appendix B.4 *continued*

Single Sample Maximum Standards								
Kelp Bed Stations								
Month	9-m Stations			18-m Stations				
	C4	C5	C6	A1	A7	A6	C7	C8
<i>Total Coliform</i>								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	100%	100%	100%	100%	100%
<i>Fecal Coliform</i>								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	100%	100%	100%	100%	100%
<i>Enterococcus</i>								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	1	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Compliance Rate	100%	100%	100%	99.4%	100%	100%	100%	100%

[illegible]

Officer	Rank	Unit	City	State	Year
Officer	Rank	Unit	City	State	Year

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